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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,249	09/17/2003	Michael David Leffel	1052.041	1129

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EXAMINER


NGUYEN, KHANH V

ART UNIT PAPER NUMBER

2817

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/667,249	Applicant(s) LEFFEL, MICHAEL DAVID 	
	Examiner Khanh V. Nguyen	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☐ Claim(s) 1-17 and 20-66 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 47-66 is/are allowed.
- 6) ☐ Claim(s) 1, 2, 4, 16, 17, 20-23, 25, 41, 42, 45 and 46 is/are rejected.
- 7) ☒ Claim(s) 3, 5-15, 18, 19, 24, 26-40, 43 and 44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 16, 17, 20-23, 25, 41, 42, 45, 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Hedberg et al. (6,731,168).

Regarding claims 1, 22, Hedberg et al. (Fig. 3) disclose a predistortion processor (20/60) can be read as a predistorter comprising: a magnitude calculation (72) operable as an index generator for generating an index into a look-up table (LUT) based on the input signal (70); a scale (82) coupled to a multiplier (78) and an offset coupled to an adder (80) together can be read as an index adjuster for adjusting the index to compensate for changes in operating characteristics of the amplifier; the LUT adapted to provide one or more predistortion parameters (90, 92, 100, 102) based on address signal (77) output from elements (78, 80, 82, 84); and a predistorter adapted to predistort the input signal based on one or more pre-distortion parameters (90, 92, 100, 102) to generate a predistorted input signal (18) via a complex multiplier (74) for application to the amplifier.

Regarding claims 2, 23, wherein the index adjuster is adjusted based on a measure of distortion in the amplified output signal. Note Fig.1, amplified output signal (40/18) is fed to a controller (22) which controls the predistortion processor (12).

Regarding claims 4, 25, further comprising amplifying the pre-distorted input signal with the amplifier (34 of Fig. 1) to generate the amplified output signal (40/18).

Regarding claims 16, 17, 41, 42, wherein the application stated "frequency-independent/dependent predistortion is implemented using look-up tables", since reference circuit (Fig. 4) also discloses look-up tables (86, 88). Therefore, independent/dependent predistortion is implemented using look-up tables are inherent in the LUTs.

Regarding claims 20, 45, wherein the look-up table is generated during training of the amplifier and always kept fixed after training is complete, see a TRAINER (48) of Fig. 1.

Regarding claims 21, 46, wherein the index is based on power of the input signal (70).

#### ***Allowable Subject Matter***

Claims 3, 5-15, 24, 26-40, 43, 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 47-66 are allowed.

Claims 2, 24 call for, among others, the measure of distortion is based on a narrow-band power level in the amplified output signal.

Claims 5-12, 26-33 call for, among others, amplifying the pre-distorted input signal comprises controlling overall gain of the amplifier to compensate for the changes in the operating characteristics of the amplifier.

Claims 13-15, 34-36 call for, among others, amplifying the pre-distorted input signal comprises controlling bias applied to one or more amplifier stages of the amplifier.

Claims 18, 19, 43, 44, 47-66 call for, among others, look-up table is automatically update by applying the measure to one or more algebraic equations to generate one or more parameter values and applying one or more parameter values to one or more polynomials to update the look-up table.

Claims 37-40 call for, among others, first and second detectors, receiver, and controller having the functions as claimed.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references (Thron et al. (6,304,140); Wright et al. (6,356,146); Ichihara (6,587,513)) show further predistortion circuitry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh V. Nguyen whose telephone number is (571) 272-1767. The examiner can normally be reached from 8:00 AM - 3:30 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**KHANH VAN NGUYEN**  
**PRIMARY EXAMINER**  
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